Navy Region Southwest Renewable Energy and Distributed Generation Projects

Presented by:

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Navy Region Southwest Bases

- Naval Base San Diego
- Naval Base Point Loma
- Naval Base Coronado
- Naval Air Facility El Centro
- Naval Air Station Lemoore
- Naval Base Ventura County
- Naval Weapons Station Seal Beach (including detachments at Fallbrook and Concord)
- Naval Air Station Fallon, Nevada
- Naval Air Weapons Station China Lake
- Naval Surface Warfare Center Corona Division
- Naval Postgraduate School at Monterey

Naval Base Coronado 750 kW Photovoltaic System

- Completed in Nov. 2002
- 2nd largest PV system in Federal Government
- Largest PV carport in world
- Completed under ESPC
- 1.2 Million kWh per year
- 3 % peak load of NBC
- 10 year payback (includes CA and OSD funding assistance)
- DOE FEMP 2002 Showcase Energy Project

Naval Base Coronado 750 kW Photovoltaic System

Photovoltaic System at Naval Amphibious Base

- 30 kW system on roof of Commander Naval Surface Force, Pacific Headquarters
- On-line June 2002
- Completed as ESPC
- Produces 50,000 kWh per year

Photovoltaic System at Naval Base Coronado

- NASNI B-678
- Command Staff Building
- Rated at 21.6 kW
- On-line since 1999
- No roof penetration
- Generates 35,000 kWh/yr
- Electric vehicle charging at B-678

Photovoltaic System at Naval Base San Diego

- Rated at 14.4 kW
- Medical Clinic
- On-line since 1999
- Thin Film CdT technology
- Potential for lower manufacturing cost

Photovoltaic Systems at Naval Base Ventura County

- Santa Cruz Island (West of Pt. Mugu)
- On-line in 1999
- Rated at 150 kW
- Off-grid with battery backup
- Two other PV systems at remote locations on Santa Cruz Island

Photovoltaic System at Naval Auxiliary Landing Field, San Clemente Island

- Rated at 80 kW
- On -line since 1997 at a remote Radar Electronics Warfare facility
- Initially stand-alone with 2,500 kWh battery storage
- Now connected to Island’s electrical grid

Solar Thermal System at Naval Base San Diego

- Swimming pool heating at B-3279
- 10,000 Square foot low-temperature roof-top solar collector system
- Provides 2,400 MBTU per year = 60 % of load
- Saves $17,000 per year
- ESPC project (with other energy improvements)

Energy and Sustainable Design Showcase Facility, Naval Base Ventura County

- Building PH-850
- Completed in 2000
- Features day-lighting, non-VOC paint and furnishings, water saving landscaping and irrigation, solar thermal, solar electric with battery backup

Wind Turbines at Naval Auxiliary Landing Field, San Clemente Island

- Three 225 KW turbines
- On-line since 1998
- Connected to Island grid
- Provides approx. 10 % of San Clemente Island's electrical load
- Saves $100,000 per year

Wave Energy Electrical Generation

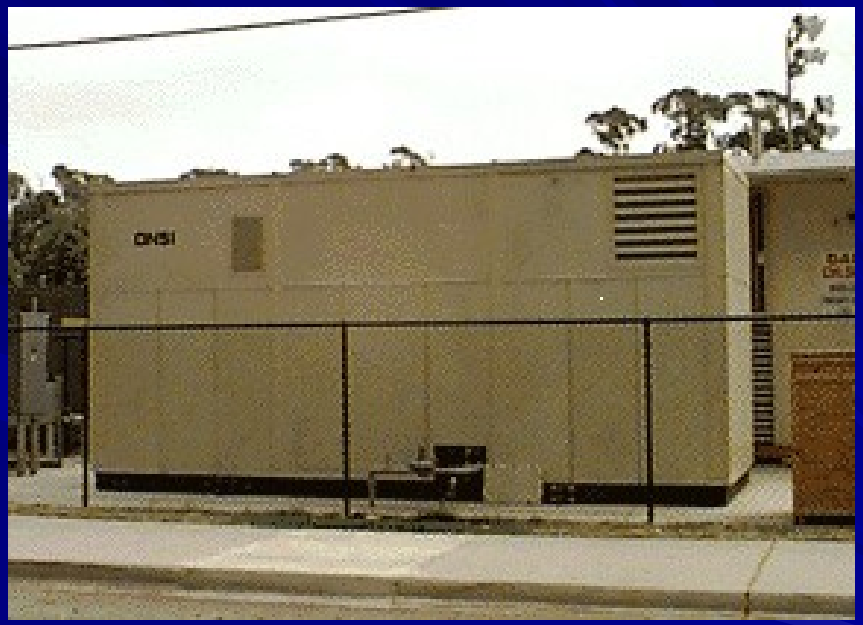
- Navy is assessing feasibility at NALF San Clemente Island
- Each buoy system rated at 50 kW
- Grid connection
- Initial development supported by Office of Naval Research

Microturbines at Naval Amphibious Base, Naval Base Coronado

- Two-60 kW turbines with 700,000 BTU per hour heat recovery
- Used at central high-temperature boiler plant (B-299)
- Burns natural gas with low emissions
- Energy savings over $78,000 per year

Fuel Cells at Navy Region Southwest

- 200 kW units installed at Naval Base Ventura County and Naval Air Station Fallon, NV
- Part of large DoD demo program started in 1997
- Phosphoric Acid technology
- Units rated at 200 kW



Fuel Cells at Navy Region Southwest

- 9 units installed in 2003 at SUBASE Naval Base Point Loma, Naval Base Coronado, and Naval Air Weapons Station China Lake
- Proton Exchange Membrane (PEM) technology
- Nominal rating of 2.5 kW per unit
- Overall efficiency of 85 %
- 2004 demonstration program has been funded

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